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Clement Hiel

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EXAMINER

GRAY, JILL M

ART UNIT

PAPER NUMBER

1794

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/595,459	Applicant(s) HIEL ET AL.	
	Examiner Jill Gray	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/28/2008</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims

1. Pursuant to the entry of the amendment of March 12, 2009, claim 16 has been amended and new claims 29-35 have been added. Currently, claims 16-35 are pending.

Information Disclosure Statement

2. All prior art references co-pending applications cited on the Information Disclosure Statement of October 28, 2008 have been considered.

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claim 16 is rejected under 35 U.S.C. 102(b) as being anticipated by Buning et al., 4,195,141 and 4,247,436 (Buning).

Buning discloses composite rod comprised of a matrix material that further comprises at least one resin, at least one hardener and one or more accelerators and a plurality of longitudinally extending fibers of one fiber type embedded in the matrix, wherein the fiber/resin matrix is cured to form the composite rod. Regarding the requirement that the chemical formulation have elongation properties in excess of glass fiber elongation properties, Buning teaches increased adhesiveness of the glass fiber to the polymeric resin matrix materials to prevent fiber separation or pull-out. Hence, the skilled artisan would have immediately envisaged a matrix material that has elongation properties greater than that of the glass fibers reinforced therein to minimize fiber pull-

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out. Accordingly, this requirement is anticipated by prior art teachings. See both documents in their entirety, in particular note the Examples. Regarding the requirement that the fiber/resin matrix is cured at a curing temperature of from about 350°F to about 500°F to form the composite core, this limitation is drawn to the method of making the composite core. This constitutes a process limitation within a product claim, wherein patentability is based upon the product itself.

Accordingly, the disclosure of Buning anticipates the invention as claimed in present claim 16.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Buning et al., 4,195,141 and 4,247,436 (Buning), as applied above to claim 16.

Buning is as applied above but does not specify the particular type of glass fibers. In this regard, it is the examiner's position that the disclosure of Buning of glass fibers would have rendered obvious a fiber type of the instant claimed modulus of elasticity as set forth in present claim 23. Moreover, the requirement for S-glass fibers is no more than a preferential selection of one glass reinforcement fiber from among many being selected for its' art recognized purposed. Hence, this requirement is not construed to be a matter of invention in the absence of factual evidence to the contrary.

Therefore, the teachings of Buning would have rendered obvious the invention as claimed in present claims 23-24.

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5. Claims 16, 23-24 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson 4,515,435 in view of Buning et al., 4,247,436 and 4,195,141 (Buning), as applied above to claim 16.

Anderson discloses a composite core comprising a matrix resin and a plurality of longitudinally extending fibers of one type embedded therein to form a fiber/resin matrix, per claim 16. The fibers can be glass fibers and the resin is epoxy. In addition, Anderson discloses that a coating can surround the core as required by present claim 26. See entire document and in particular, abstract, column 3, lines 163-43, column 5, lines 24-45, column 8, lines 26-35, and Figures 1 and 2. Anderson is silent as to the specific epoxy composition.

Buning is as set forth above and teaches composite rod comprised of a matrix material that further comprises at least one resin, at least one hardener and one or more accelerators and a plurality of longitudinally extending glass fibers of one fiber type embedded in the matrix, wherein the fiber/resin matrix is cured to form the composite rod.

Though Anderson is silent as to the curing agents for his epoxy, it is well known in the art to include one or more hardener and accelerators in an epoxy to facilitate curing of said resin. This would have been an obvious expedient to one of ordinary skill in the art. Moreover, the teachings of Buning would have provided direction to the skilled artisan to modify the teachings of Anderson by including a hardener and accelerator in his epoxy resin to facilitate curing.

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Regarding claims 23-24, Anderson does not specify the particular type of glass fibers. In this regard, it is the examiner's position that the disclosure of Anderson of glass fibers would have rendered obvious a fiber type of the instant claimed modulus of elasticity as set forth in present claim 23. Moreover, the requirement for S-glass fibers is no more than a preferential selection of one glass reinforcement fiber from among many being selected for its' art recognized purposed. Hence, this requirement is not construed to be a matter of invention in the absence of factual evidence to the contrary. Applicants are invited to provide such evidence.

Regarding claims 27 and 28, Anderson does not specifically teach a layer of conductors surrounding the core. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Anderson by including one or more layers of conductors for utilities requiring electrical transmission in addition to optical signals.

Regarding claim 29, Buning teaches a matrix material comprising an epoxy resin and a hardener that is substantially similar to that contemplated by applicants. Accordingly, the examiner has reason to believe that properties such as the elongation in the prior art matrix material would be the same as or substantially to those elongation properties contemplated by applicants in the absence of factual evidence to the contrary.

Therefore, the combined teachings of Anderson and Buning would have rendered obvious the invention as claimed in present claims 16, 23-24 and 26-29.

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6. Claims 16-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quigley 5,540,870 in view of Buning et al., 4,247,436 and 4,195,141 (Buning), as applied above to claim 16.

Quigley teaches a structural member of fiber reinforced composite material comprising a rod formed with an outer sheath of fiber reinforced material and an inner core material of fiber reinforced material. The fibers can be carbon or glass, and each layer can be formed from an epoxy resin, per claims 16-19, 22 and 25. See entire document and abstract. Quigley does not specifically teach that the first layer is made from carbon fibers surrounded by glass fibers or adjusting the carbon/glass ratio to change the mechanical properties. Nonetheless, Quigley teaches that the fiber materials that are employed in his invention include glass fibers and carbon fibers. See column 1, lines 45-49. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form a fiber reinforced composite material using carbon fiber surrounded by glass fibers and to adjust and modify the carbon/glass ratio during routine experimentation, commensurate with the desired properties of the end product, such as enhanced tensile strength and flexibility. Quigley is silent as to the specific epoxy components.

Buning is as set forth above and teaches composite rod comprised of a matrix material that further comprises at least one resin, at least one hardener and one or more accelerators and a plurality of longitudinally extending glass fibers of one fiber type embedded in the matrix, wherein the fiber/resin matrix is cured to form the composite rod.

Though Quigley is silent as to the curing agents for his epoxy, it is well known in the art to include one or more hardener and accelerators in an epoxy to facilitate curing of said resin. This would have been an obvious expedient to one of ordinary skill in the art. Moreover, the teachings of Buning would have provided direction to the skilled artisan to modify the teachings of Quigley by including a hardener and accelerator in his epoxy resin to facilitate curing.

Regarding claims 23-24, Quigley does not specify the particular type of glass fibers. In this regard, it is the examiner's position that the disclosure of Quigley of glass fibers would have rendered obvious a fiber type of the instant claimed modulus of elasticity as set forth in present claim 23. Moreover, the requirement for S-glass fibers is no more than a preferential selection of one glass reinforcement fiber from among many being selected for its' art recognized purposed. Hence, this requirement is not construed to be a matter of invention in the absence of factual evidence to the contrary. Applicants are invited to provide such evidence.

Therefore, the combined teachings of Quigley and Buning would have rendered obvious the invention as claimed in present claims 16-26.

7. Claims 30-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT Publication WO2003/091008 A1 (the publication).

The publication teaches an aluminum conductor composite core reinforced cable comprising a composite core comprising a matrix material and a plurality of longitudinally extending fibers of one or more fiber type embedded in the matrix and at least one layer of aluminum conductor surrounding the core, as required by present

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claim 1. In addition, the publication teaches that the fibers can be glass fibers or carbon fibers as required by claims 32-34 and that said composite core comprises one fiber type can have a modulus of elasticity in the range of about 6 to about 7 Msi, as required by present claim 35. See page 13, lined 9-20. It should be noted that the publication teaches a modulus of elasticity for the composite core that ranges from about 22 Msi to about 37 Msi. The aluminum conductor surrounding the core is helically wound, as set forth by present claim 31. See entire document, and for example abstract and page 10, lines 7-18. The publication teaches that thermosetting resins such as epoxy can be used as the matrix material further teaching that said resin contains at least one hardener and one or more accelerators, as required by present claim 30. See page 20, lines 14-25 and pages 46-47. The publication does not specifically teach that the formulation has elongation properties in excess of glass fiber elongation properties. In this regard, as set forth above the publication teaches that a modulus of elasticity for the composite core ranges from about 22 Msi to about 37 Msi and that that said composite core comprises one fiber type (glass) can have a modulus of elasticity in the range of about 6 to about 7 Msi. Accordingly, it is the position of the examiner that the elongation properties of the resin material would necessarily be greater than those of the fiber type to net a cumulative effect in the modulus of elasticity in the resultant composite core that is substantially greater than that of the fibers per se. This teaching would render obvious the requirement that the formulation has elongation properties in excess of glass fiber elongation properties.

Therefore, the teachings in the publication would render obvious the invention as claimed in present claims 30-35.

Response to Arguments

8. Applicant's arguments filed March 12, 2009 have been fully considered but they are not persuasive.

Applicants argue that a resin composition having elongation properties in excess of glass elongation properties is not disclosed or suggested by Buning.

In this regard, and as set forth above, it is the examiner's position that Buning teaches increased adhesiveness of the glass fiber to the polymeric resin matrix materials to prevent fiber separation or pull-out. Hence, the skilled artisan would have immediately envisaged a matrix material that has elongation properties greater than that of the glass fibers reinforced therein to minimize fiber pull-out. Accordingly, this requirement is anticipated by prior art teachings.

Applicants argue that Buning does not disclose or suggest a matrix material that is cured at a curing temperature of from about 350°F to about 500°F.

In this regard, as set forth above, regarding the requirement that the fiber/resin matrix is cured at a curing temperature of from about 350°F to about 500°F to form the composite core, this limitation is drawn to the method of making the composite core. This constitutes a process limitation within a product claim, wherein patentability is based upon the product itself.

Applicants argue that claims 23 and 24 depend upon independent claim 16 and that Buning does not disclose or suggest a matrix material that has an elongation in

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excess of glass fiber elongation or that is cured at a curing temperature of from about 350°F to about 500°F.

In this regard, the examiner's position is as stated above and incorporated herein.

Applicants argue that there is no disclosure in Anderson that the epoxy resin of Anderson has elongation properties in excess of glass fiber elongation and that there is no disclosure or suggestion by Anderson that the resin is cured at a temperature of from about 350°F to about 500°F.

In this regard, it is the examiner's position that Buning teaches increased adhesiveness of the glass fiber to the polymeric resin matrix materials to prevent fiber separation or pull-out. Hence, the examiner's position is that the collective teachings of Anderson and Buning would have suggested to the skilled artisan a matrix material that has elongation properties greater than that of the glass fibers reinforced therein to minimize fiber pull-out. Regarding the resin being cured at a temperature of 350°F to about 500°F, this limitation is drawn to the method of making the composite core. This constitutes a process limitation within a product claim, wherein patentability is based upon the product itself.

Applicants argue that that there is no disclosure in Quigley that the epoxy resin of Quigley has elongation properties in excess of glass fiber elongation and that there is no disclosure or suggestion by Quigley that the resin is cured at a temperature of from about 350°F to about 500°F.

In this regard, it is the examiner's position that Buning teaches increased adhesiveness of the glass fiber to the polymeric resin matrix materials to prevent fiber separation or pull-out. Hence, examiner's position is that the collective teachings of Quigley and Buning would have suggested to the skilled artisan a matrix material that has elongation properties greater than that of the glass fibers reinforced therein to minimize fiber pull-out. Regarding the resin be cured at a temperature of 350°F to about 500°F, this limitation is drawn to the method of making the composite core. This constitutes a process limitation within a product claim, wherein patentability is based upon the product itself.

Applicants argue that with respect to claim 28, that neither Anderson nor Buning disclose or suggest a conductor surrounding a composite core and that there would be no reason to modify the optical cable disclosed by Anderson to include a layer of electrical conductor.

The examiner disagrees. In particular, it would have been obvious to the skilled artisan to modify the teachings of Anderson to form a hybrid cable by including a layer of conductors.

No claims are allowed.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill Gray whose telephone number is 571-272-1524. The examiner can normally be reached on M-Th and alternate Fridays 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on 571-272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jill Gray/
Primary Examiner
Art Unit 1794

jmg